

HI-FI SEPARATES

SP110 DAB TUNER

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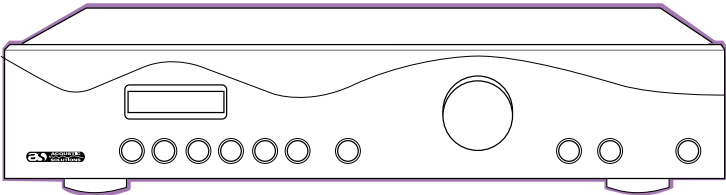
INTRODUCTION

Congratulations on purchasing this Acoustic Solutions DAB tuner, you have chosen to become one of the early adoptors of digital radio in the UK, which will set the standard for radio quality in the near future. The SP110 DAB tuner has been developed following an extensive research and development program that has culminated in what we regard as an exceptional mid-range hi-fi product. Our aim when designing this product was to produce a visually appealing product which would look comparable to higher priced products, and give an exceptional performance to match.

We trust that this product will give you hours of listening pleasure, and provide years of unparalleled performance. As with any new electrical product please be patient and allow at least 36 hours use before all components have acclimatized themselves with your surroundings, and found their optimum working temperature.

WHAT IS DAB?

DAB radio will change the way that people listen to radio over the next few years. You will probably be aware that digital radio will become mandatory in the future as the terrestrial radio frequencies which you currently listen to will be re allocated for other uses such as emergency services. This means that today you are one of the pioneers using this technology, however in a short space of time everybody will benefit from clear digital radio



Digital Radio is like analogue FM radio but even better. Digital radio offers an abundance of new digital only stations, improved sound quality, no frequencies to remember as stations are displayed using names, which makes it very easy to tune. The audio quality of DAB is near that of a CD with no interference and no retuning, and the introduction of text, data and even pictures will enhance DAB in the future .

The BBC was the pioneer of digital radio, beginning transmissions in September 1995. Digital One, the national commercial radio multiplex operator began broadcasting in November 1999. There has been a growth in the number of digital radio stations throughout the UK and both the BBC and Digital One are committed to extending their coverage. Digital One currently covers 80% of the UK population, soon to increase to 85%, and the BBC covers 65% with the aim of increasing coverage to 80% by 2003.

To find out about digital radio coverage in the UK, check out the following websites:

BBC: www.bbc.co.uk/digitalradio
National Commercial Radio: www.ukdigitalradio.com
DRDB: www.drdb.org

Your Acoustic Solutions SP110 DAB tuner will receive programs broadcast on Band 3 digital radio (174-240MHz), there are 41 channels within this range numbered 5A to 13F, the number of channels you can receive will be dependant on your location and signal strength. The UK has been allocated seven multiplexes by the Radio Authority - in the spectrum 217.5-230.0 MHz, which are numbered 11B to 12D.

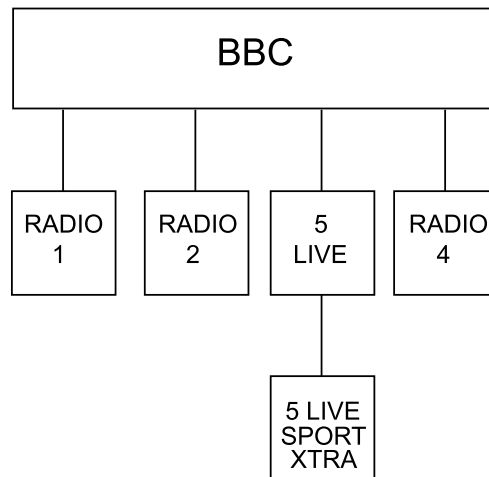
A multiplex is a broadcaster such as BBC or Digital One who will provide a host of different stations within their multiplex. If we consider the BBC as an example, the following diagram shows how the BBC multiplex may work.

The multiplex name is BBC (also sometimes referred to as an ensemble)
Also shown is channel and carrier frequency although it is not necessary to know this as the BBC is known by name rather than frequency.

Below the main multiplex provider name will be a host of primary stations.
These are labelled as the station name again rather than the frequency.
This allows you to tune SP110 by station name, which is easier than trying to recall frequencies.

Sometimes a secondary service station may be provided by the broadcaster, for instance this is sometimes used when an alternative commentary is provided on a sporting match or event. These secondary service stations are not permanent and may not always be used for broadcast. When a secondary station is available below the primary station, the following symbol will be shown on the display of the SP110; >>.

Details on how to use the SP110 are covered in the following pages.



SAFETY INSTRUCTIONS

CAUTION: To reduce the risk of electric shock, do not remove any cover. NO USER-SERVICEABLE PARTS INSIDE, REFER ANY SERVICING TO QUALIFIED SERVICE PERSONNEL.

IMPORTANT SAFETY INSTRUCTIONS

- Read and keep these instructions available for future reference.
- For indoor use only.
- The unit must only be connected to a suitable mains power supply using the mains power lead provided.
- To reduce the risk of fire or electrical shock, do not expose this unit to rain or moisture.
- Unplug the unit from the wall socket during lightning storms and when it is not going to be used for a long period of time.
- Take care that foreign objects do not enter, or liquids are not spilled, into the enclosure through any openings. If this should happen, refer to qualified service personnel before attempting to use.
- Ensure adequate ventilation - do not cover this unit with curtains, etc.
- Do not install near any heat source, such as radiators, or other equipment that produces heat.
- Protect the mains power cable from being damaged.
- The SP110 system is double insulated and does not require an earth connection in the UK mains plug.

The lightning flash symbol with the arrowhead within an equilateral triangle is intended to alert the user to the presence of uninsulated 'dangerous voltage' within the product's enclosure that may be sufficient to constitute a risk of electric shock to persons

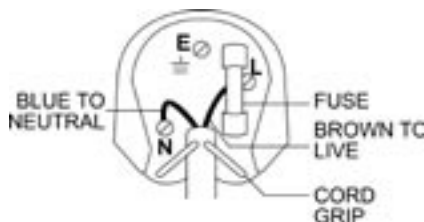


The exclamation point within an equilateral triangle is intended to alert the user to important operating and maintenance instructions in the service literature relevant to this appliance.

UK MAINS PLUG DETAILS

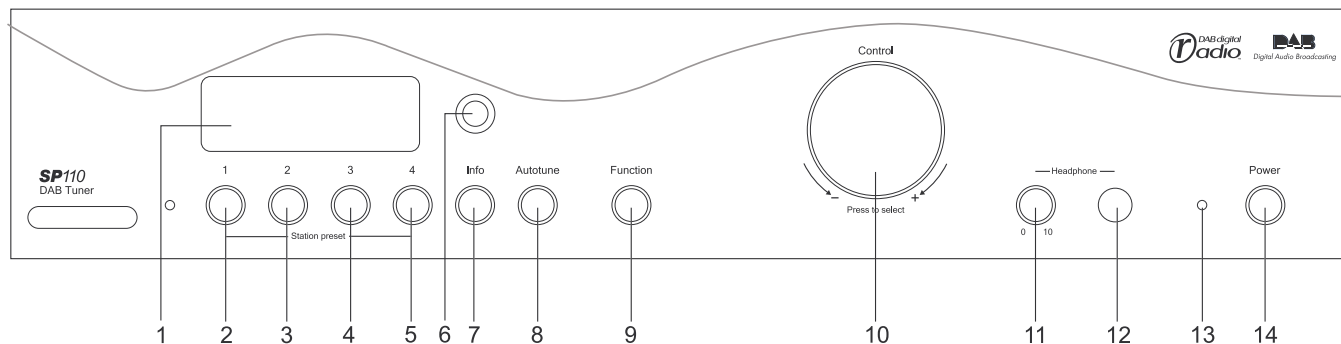
For your convenience a mains plug with a fuse (3 Amp) has been fitted to this appliance. For your safety please observe the following information.

- The SP110 is designed to operate on AC mains supply between 220 and 240 volts, 50 Hz.
- The wires in the mains lead are coloured in accordance with the following code:
 - BLUE - NEUTRAL
 - BROWN - LIVE
- Under no circumstances should the Neutral or Live wires be connected to the 'E' (Earth) terminal.



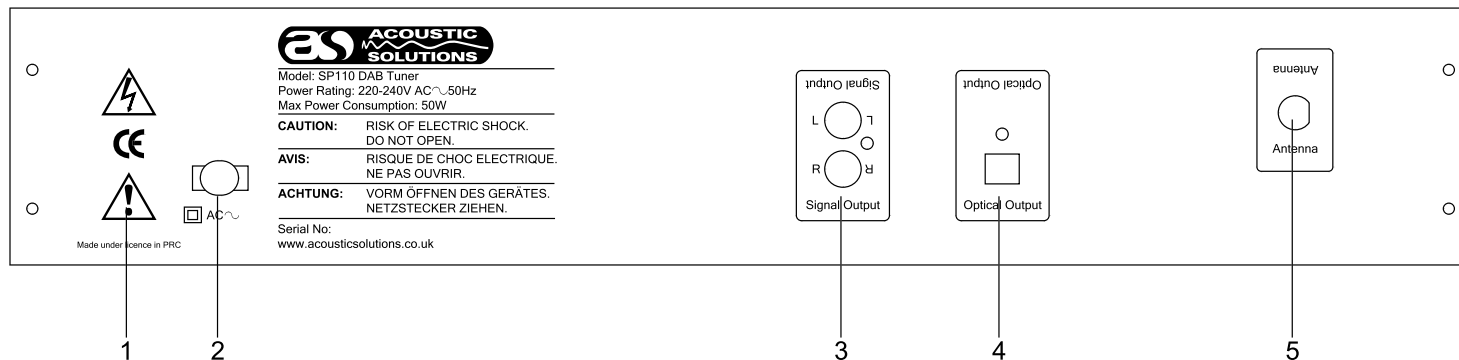
This product complies with European low voltage (73/23/EEC) and electromagnetic compatibility (89/336/EEC) directives.

FRONT PANEL CONTROLS



1. LCD display, indicates the station on line 1, and displays dynamic text below on line 2 , which also display other menu features as described on page 8-13.
2. Preset channel 1 button-selects preset station 1.
3. Preset channel 2 button-selects preset station 2.
4. Preset channel 3 button-selects preset station 3.
5. Preset channel 4 button-selects preset station 4.
6. IR receptor, this can be used with the optional 3 in 1 remote control. This controls the Hi-Fi Amplifier, DAB Tuner and CD player from one controller.
7. Info buttons changes the text content on line 2 of the display, to show; DLS (Dynamic label segment, info text supplied by each radio station), Program type (classification give by the radio station ie: Pop music or Rock), Multiplex name (name of multiplex broadcaster), Time & date, or Channel and frequency.
8. Auto tune button, press to activate auto location of all available DAB services. Press once for UK services or, hold for longer than 2 secs to activate an international search (when SP110 unit is being used in other band 3 areas).
9. Function button, activates features such as; station order, manual tune, DRC value, SW version indication, signal error rate. Hold for 2 seconds to activate factory reset, this will erase all memory locations and multiplex listings, and instigate re tuning.
10. Rotary control knob, allows adjustment of parameters such as changing stations. Pressing the control knob selects the displayed station. Also operates the commands in the function menus. Press once to show signal strength, press again to remove signal strength display.
11. Headphone volume control
12. Headphone socket, stereo 6.4mm jack suitable for use with most headphones
13. LED power indicator light will show green to indicate that the SP110 is on. It will show red if the SP110 is in stand by mode as set by the optional remote control.
14. Power button, switches mains power on/off, however please note that mains power is still applied to this unit even though this switch may be off.

REAR PANEL CONNECTIONS



INSTALLATION AND POSITION

This tuner should be positioned on a flat stable surface. We would recommend that the position of your hi-fi equipment should be chosen carefully to provide adequate protection for this device, and also provide an attractive showcase for your investment. Hi-fi equipment is not designed for continuous movement, therefore it is recommended that a permanent home for your hi-fi be achieved as soon as possible.

This tuner is fitted with a mains transformer, it is not recommended that sensitive audio equipment such as turntables or cassette decks be placed immediately next to this item. Do not place this product in areas where direct sunlight is present, nor place it adjacent to a radiator or other heating appliances.

Like all electrical devices this tuner will generate a modest amount of heat. The cooling of this device is reliant upon the flow of air within the case. Care should be taken not to cover this unit with such items as rugs, covers or curtains which will restrict this air flow and may cause over heating.

Never allow the tuner to come into contact with water or liquids, and ensure that small objects do not fall through the ventilation grills. In the event of this happening, disconnect the wall plug from the mains supply immediately, and contact your local dealer for service advice.

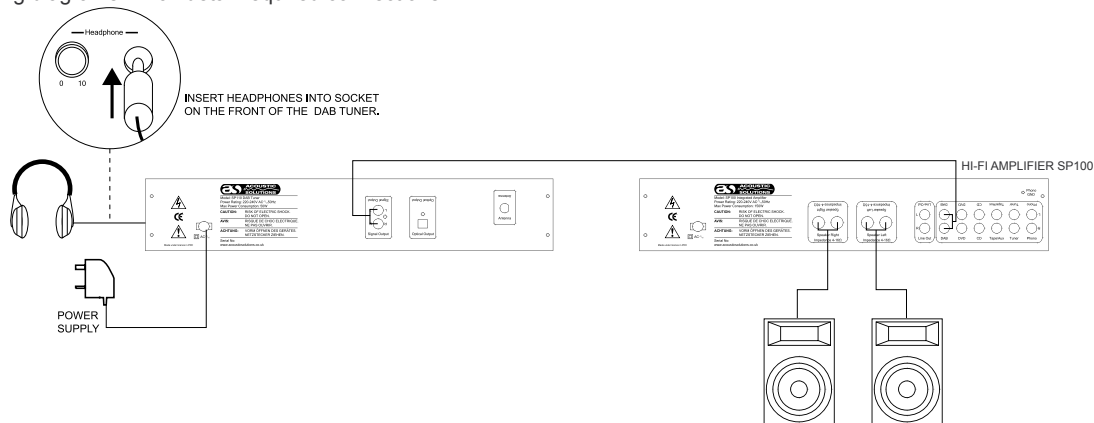
Do not position the power cable such that it can be walked upon, or damaged by regular traffic. Ensure that all other interconnect cables are stowed safely behind the unit, and cannot be easily snagged or kicked thus causing possible damage to the unit.

Ensure that all interconnection cables have been made correctly, and that polarity has been maintained.

MAKING THE CONNECTIONS

It is necessary to connect this DAB tuner to an external amplifier and loudspeaker set up, (It is not possible to connect loudspeakers directly to this DAB tuner). It is possible to listen to the DAB tuner without external amplification equipment, through headphones only.

Please see the following diagrams which detail required connections:

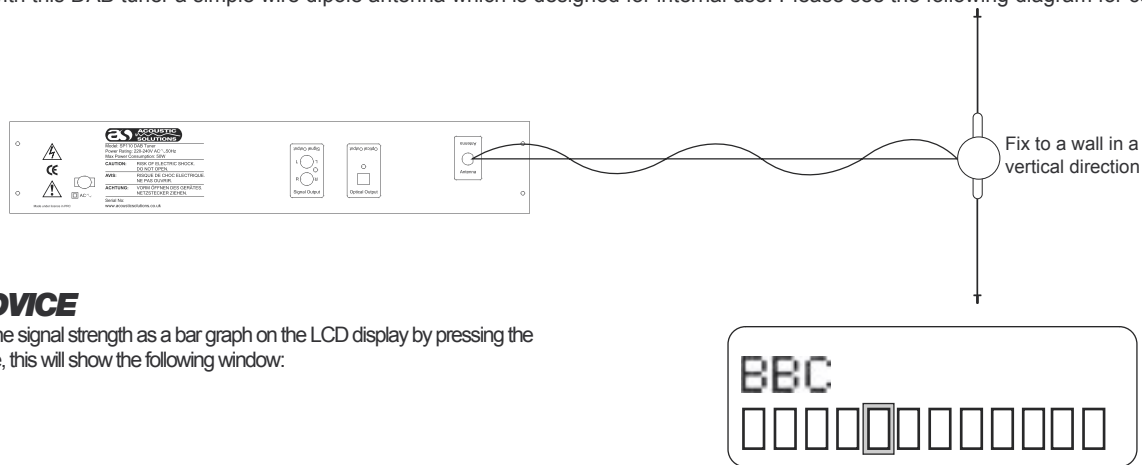


FIXING THE ANTENNA

As with any radio receiver, the quality of the output signal will be directly determined by the strength of the input signal that it receives.

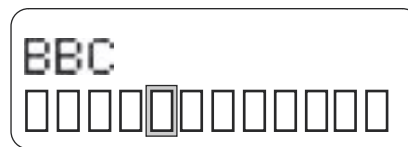
Obviously the location of the tuner in relation to the transmitter will have a direct influence on the quality of the available signal, however it is important to provide the best possible antenna to the tuner to provide the best signal conditions possible.

We have provided with this DAB tuner a simple wire dipole antenna which is designed for internal use. Please see the following diagram for correct installation procedure:



ANTENNA ADVICE

It is possible to display the signal strength as a bar graph on the LCD display by pressing the rotary control knob once, this will show the following window:



The signal strength is determined by the number of bars which are illuminated towards the right, the stronger the signal, the more bars that will be filled. The 5th segment is shown with a square outline, this determines the minimum reference point for adequate signal strength, and any signal below this point will be affected by poor or interrupted audio quality. It is possible to adjust the signal strength by changing the position of the antenna, and by using the visual bar graph display it is possible to position the antenna for maximum signal strength. Further enhancements can be made to the reception quality by purchasing a better quality aerial, available from most hi-fi retailers. For best reception, we would recommend an external or loft mounted DAB antenna. There are two main types available, a) Dipole, b) 4-element aerial.

Diploe - for use in marginal signal areas, this type of antenna is omnidirectional and should increase the strength of all DAB stations being received.

4-element aerial - also for use in marginal or poor signal areas. This type is directional and has a high gain. Like a TV or FM aerial, this type of antenna needs to point at a transmitter. Installation requires someone to move the aerial whilst you monitor the signal strength. If you can receive signals from multiple transmitters you should point your aerial at the one which gives you the best signal for the services which you want to listen to.

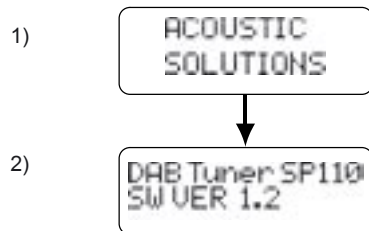
It is possible to use a TV or FM aerial with your DAB tuner as this is normally mounted externally. This may give a stronger signal than a simple internal aerial, however it would not be tuned specifically for DAB reception. You would need to change the plug on your TV/FM aerial to an 'F' type, and it may also be necessary to use a signal booster to enhance the signal.

USING THE DAB TUNER

When you unpack the tuner from the box, all settings will be at default values. These can be altered according to your listening tastes; new settings will be retained within the memory of the tuner and will remain set even after switching the system off.

Once you have made all the necessary connections to the DAB tuner, you are now ready to start listening to the DAB radio experience.

When you turn on the tuner, the display will show the following messages for 4 seconds:



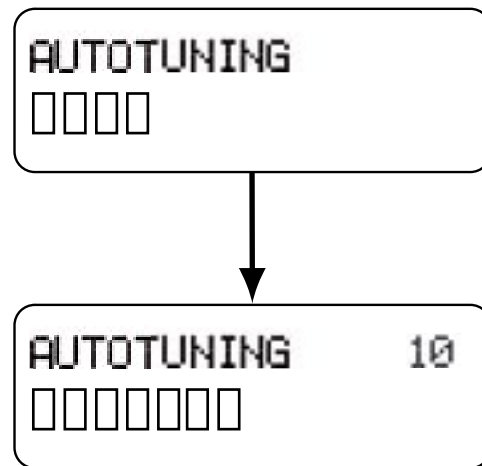
Following this the tuner will then enter the auto tune mode as the DAB tuner locates digital radio stations within your area.

It is not possible to interrupt this sequence as the tuner needs to have at least one digital station to build a station list, and it will continue to scan until at least one service has been located.

The display will read 'Autotuning' and you will see a moving bargraph on line 2 which indicates the progression of this tuning operation. As this process completes a number will be shown in the top right hand corner of the display showing the number of stations located.

If no services are located, please check that the antenna connection is correct. At this point the function menu can be selected which allows manual tuning to try and locate services in your area (see page 3 for information on manual tuning).

Following manual tuning, if no DAB radio stations can be received, please check that adequate DAB coverage exists in your area (see page 2 on checking for coverage information).



BUILDING A STATION LIST

Following the initial autotune upon power up, the SP110 will build a station list of services that exist in your area.

The default way in which these stations will be displayed on the LCD panel is in alphanumeric order (to change this see page 12), recognising numbers before letters, therefore stations such as 6 Music from the BBC will be listed first.

To change which station you are listening to, simply turn the rotary function control knob clockwise to scan up through the alphabetical stations list, or anticlockwise to scan down.

This changing list will be shown on line 2 of the LCD display, with line 1 showing the current station which you are listening to. To select a new station from the scrolling list, push the function control knob to make your selection. (Note it is only necessary to press this button once to make your selection). The DAB station will change to your new selection.

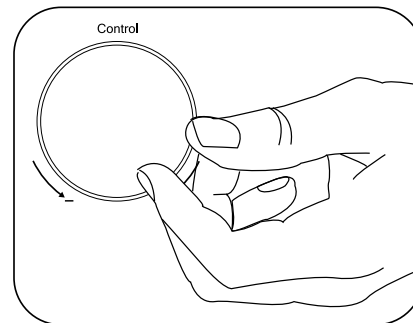
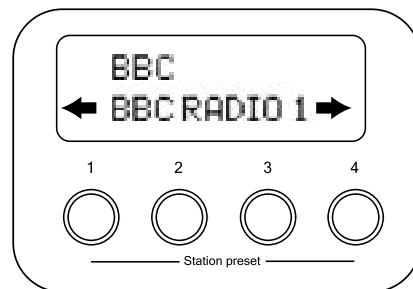
(Note: by pressing the function control knob again, the signal strength will be shown on line 2 of the display, it will then be necessary to push this knob again to remove the signal strength display from line 2 of the LCD).

Once the SP110 has built a station list, it will retain this list in memory unless you decide to reset it. Sometimes it may be the case that a particular DAB station is not available in your area, however the station still exists in the memory of the SP110. This may occur if the DAB tuner has been moved, and is now being operated in a different location. It may also be that secondary level DAB stations (as described on page 2) are not being broadcast, thus leaving this channel inoperative.

In this situation the LCD display will show a '?' in front of the station name to indicate that service is not available. If you decide to select this station, the display will read 'Station not available' and will revert back to the previous service.

To clear the station list from the memory of the SP110, it is possible to operate a factory reset function. To do this hold down the function button for a period longer than 2 seconds, the LCD display will ask you to confirm this operation, press the rotary control knob to accept.

It is also possible to 'tidy' the station list to remove stations which are in the memory, but have no service provided, this procedure is described on page 12 in the station order menu of the function control.



Turn rotary control knob clockwise to scan up through alphabetical stations list, or anticlockwise to scan down the list.

SETTING PRESETS

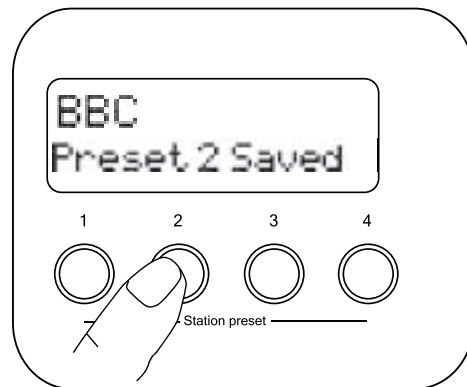
The SP110 is fitted with 4 preset buttons which can store DAB stations of your choice for one-button recall operation.

Please note that if you decide to store a secondary level DAB station, there is a possibility that this station will only be broadcast periodically, and may not have station content when you return to this preset in the future. If this is the case the LCD display will read 'Station not available', and it will be necessary to retune to an alternative station.

- To store a preset:
- 1) Tune the SP110 to the station required.
 - 2) Decide which preset you want to store this station on.
 - 3) Hold down this preset for a period longer than 2 seconds.
 - 4) LCD display will read 'Preset saved'

If a preset does not have a station allocated to it, the LCD will read 'Empty preset' if this button is pressed.

Please also refer to page 12 for instructions on using the **favourite station** setting to influence the preset locations.



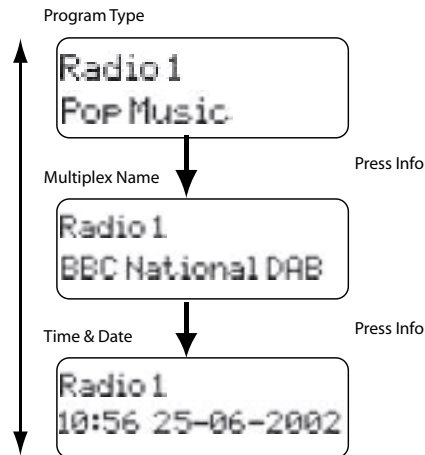
CHANGING THE INFO SETTINGS

It is possible to change the information which is displayed on line 2 of the LCD display when listening to a DAB station.

The options are as follows;

- a) DLS: Dynamic Label Segment, this is scrolling text information supplied by the radio station. This may be information on music titles or details regarding the program or station, and is provided by the broadcaster.
- b) Program type: this is a description of the type of broadcast provided by the radio station, e.g.: Pop music or Rock music. This is also provided by the broadcaster.
- c) Multiplex name: this will show the multiplex which is broadcasting the program you are listening to.
- d) Date and time: This will display a constant time/date signal provided by the broadcaster, this is not an internal clock and should always be accurate.

To change the info settings, press the info button.



The current setting will be displayed on line 1 of the LCD display.
Line 2 will show the options which are available.
Use the function control knob to scroll up/ down through the options available.
When you have located the info option you require, push the function control knob once to activate this change.

Line 2 of the LCD display will change to display the new info setting.
Line 1 of the LCD display will revert back to show the station name.

USING THE AUTO TUNE FEATURE

The nature of DAB radio means that service line ups are changing constantly as more secondary order stations become available.

If you are happy listening to your chosen radio stations, there may never be the need to establish if any new primary or secondary stations have become available.

It is possible to instigate returning of your SP110 tuner to redefine the service list of stations in your area.

To do this simply press the Autotune button, this will activate a local search for stations on band 3 in the UK only. As band 3 contains channels not allocated to the UK, to include a process to scan for all of these would only add unnecessary time to this function. A search in the UK should take approx 10 seconds. If your SP110 is being used in an area operating on band 3 outside of the UK, then the available channels can be scanned by holding down the Autotune button for a period longer than 2 seconds. This search will take approx 20 seconds but will build a station list including these other band 3 channels.

USING THE FUNCTION CONTROL

The function control allows the user to utilize some of the system options available within the SP110.

The function key operates a menu structure which has the following sections:

- 1) **Station order**, allows the user to define how the stations are arranged when scrolling up or down the stations list using the function control knob.
- 2) **Manual tune**, allows manual tuning if the autotune facility is unable to locate channels effectively, or if antenna adjustment is required..
- 3) **DRC**, Dynamic Range Control allows the SP110 to add or remove a degree of compression to compensate for the wide differences in the dynamic ranges between radio stations, ie the vast difference in sound levels between Radio 1 and Radio 4
- 4) **SW version**, allows a visual check of the software version installed on your SP110.
- 5) **Signal error rate**, a numeric value which indicates the level of correction the SP110 is applying to a DAB signal to maintain audio quality.

To access these commands press the function key once to display the available choices, these will be shown on line 2 of the LCD display. Use the function control knob to scroll through the menu to select which function you require.

A summary of each is as follows;

- 1) **Station order**. When this mode is selected you are presented with 4 options which will affect the way the SP110 displays the station order list.
 - a) The first option is **Favourite station**. This will use the internal memory of the SP110 to constantly monitor which stations you listen to, and will build a list of those you listen to the most.
As you scroll through the station list you will see that a heart shape will appear at the end of line 1 of the display. This shows that this station appears in your list of favourites.
The SP110 will list your top 10 favourite stations at the start of the station order list so that it is not necessary to scroll through the entire list to find the stations which you listen to most often.
(Note) because the SP110 builds a favourite list from the station order list, it will remove that particular station from its normal position within the station order list, and place it at the top of the list. This means that it does not appear twice within the list.
Whilst in favourite station mode, it is possible to activate a sub menu called, '**Add fav to presets**'. This will allow the SP110 to rebuild your preset buttons with the top 4 of your most listened to stations. This will allow you to access your favourite stations instantly when you switch on the SP110, by pressing one of the preset keys.
To activate this function whilst in favourite mode, press the function key to activate the menu. Select '**station order**' from this list and scroll through the station order menu, you will notice after the favourite station feature an additional choice is now available, '**add fav to preset**'. Press the function control knob once to select this feature.
 - b) The second option is '**alphanumeric**'. This is the default setting, and will arrange the service order list to be displayed numerically first, followed by alphabetically. From the station order menu, scroll through the sub menu options until '**alphanumeric**' is displayed on line 2. Press the function control knob once to select this option.
 - c) The third option is an '**active station**' list. This will allow the station order list to show the DAB stations in your area which can be received, at the top of the list, and those which appear on the list, but have no service in your area, to be at the end of the list. From the station order menu, scroll through the sub menu options until '**active station**' is displayed on line 2. Press the function control knob once to activate this option.

d) The fourth option from the '**station order menu**' is '**Tidy stations**'. This allows the station list to be sorted, and those DAB stations within the list which cannot be received within your area can be removed. From the '**station order menu**', scroll through the sub menu options until '**Tidy stations**' is displayed on line 2. Press the function control knob to select this option.

2) Manual tune. It is possible to manually tune SP110 to a specific channel allowing this multiplex to be added to the service order list. This feature can be used to assist positioning an antenna to gain optimum reception for a specific channel. To activate this mode, press the function key to display the menu options on line 2. Scroll up/down until '**manual tune**' is displayed. Press the function control knob to select this feature. Scroll up/down to choose a specific channel and frequency from the list. When you have located the specific channel you require, press the function control knob to select this channel. On line 1 the signal strength bar graph will be displayed. As the antenna is moved this bar graph will alter, and when the minimum signal threshold is reached, the name of the multiplex will be added to the station order list. Press the function control knob again to resume normal service.

3) DRC value. Radio stations generally use signal compression to reduce the gap between the high and low volumes of audio material, and to reduce the difference in dynamics between music and microphone links. Some stations (such as Radio One) are heavily compressed as the music format is generally popular music with the emphasis on a constantly high listening level. Other radio stations (such as Radio 4) use little or no compression and work on the premise that its listeners require all the highs and lows in music to define detail. This type of radio station would probably be broadcasting music such as classical which benefits from wide dynamics.

The SP110 is fitted with 3 levels of dynamic range control which apply compression to an audio signal in an attempt to reduce the difference in levels between these stations. This means that when changing between radio stations, large volume changes can be avoided.

To activate this mode, press the function key to display the menu options on line 2. Scroll up/down until '**DRC value**' is displayed. Press the function control knob to select this feature.

Use the function control knob to scroll up and down through the 3 numerical values available. These are: **0** - Which is zero compression (DRC off), **1/2** - medium compression or **1** for maximum compression.

For listeners of mainly classical music or speech programs that contain wide dynamics to emphasise content, a DRC value of 0 is recommended. However please be aware that other radio stations may be far louder, and care should be taken that amplification levels are not set too high when changing radio stations.

4) SW (software) Version. This is provided as a reference when servicing may be necessary. It allows an engineer to determine a fault quicker if this information is available.

To activate this mode, press the function key to display menu options on line 2. Scroll up/down until '**SW version**' is displayed. Press the function control knob to select this feature, the software version installed on this product will then be displayed.

5) Signal error rate. Because of the nature of digital radio, the SP110 will apply an amount of correction to an audio signal if parts of the transmission are affected. The amount of signal correction can be shown as a numeric value between 0 (no correction) and 99 (maximum correction). This is obviously directly proportional to the strength of signal in your area and the quality of your antenna.

To display the amount of signal error rate being applied, press the function key to display menu options on line 2. Scroll up/down until '**Signal error**' is displayed. Press the function control knob once to select this feature. A numerical value will be shown, and as a guide any value up to 50 is deemed acceptable. For values above this please check the quality of antenna connections and positioning.

LISTENING WITH HEADPHONES

The SP110 has been fitted with a headphone amplifier to allow discreet listening. Plug a 6.4mm stereo headphone jack in to the socket (12) provided.

Adjust the volume of the headphones using the headphone volume knob (11). Turn clockwise to increase the volume in your headphones, and anticlockwise to decrease.

The headphones amplifier works independently from the output sockets on the rear of the SP110. Connecting the headphones does not disconnect the main output signal. The headphone level control does not affect the output level of the main output sockets.

CARE AND MAINTENANCE

To clean the SP110 tuner, wipe the case with a slightly moist, lint-free cloth. Do not use any cleaning fluids containing alcohol, ammonia or abrasives. Do not spray an aerosol at or near the tuner.

Always use original packaging if it is necessary to transport the unit at any time.

If this unit is used in a dusty environment, it may be necessary to have the unit serviced at your local dealer periodically. It is not advisable to allow large deposits of dust to accumulate within the unit as it may prevent adequate cooling. Similarly dust deposits which become damp can sometimes lead to electrical problems which may cause severe damage to the delicate electronics within this unit.

TROUBLE SHOOTING

Problem

Possible cause

I cant get any sound from my SP110

Connection leads to amplifier not made correctly.
Speakers not connected to amplifier.
Power of SP110 or connected amplifier not turned on.
Ensure that the SP110 has been able to locate DAB stations

Display says 'no services available'

Check that antenna is connected.
Ensure that DAB coverage exists in your area.

I can't access secondary services

At the time of publishing this manual not many secondary services are available, this will increase as more DAB stations start broadcasting.
If a secondary service station is available, the secondary indicator >> will be displayed next to the station name.

Display has gone blank or says 'service off air'

This may occur if a broadcaster changes the label of a service or removes a label whilst you are listening to it. The SP110 will try to retune to this station, or alternatively follow the procedure for auto tune on page 11.

I can't hear the station I have selected

Ensure you have pressed the function control knob when you have made your selection. The station you are currently listening to will be displayed on line 1 of the LCD display, as you scroll through the station order list line 2 will show other station options. Press the function control knob to activate your choice.

I hear a burbling sound on some stations

DAB like other digital media is good at producing quality audio from a low level signal, however if this signal level is too low a 'burbling' sound can sometimes be heard. To reduce this try repositioning your antenna to gain maximum signal strength, alternatively you may wish to purchase an antenna booster to enhance the level available to the SP110.

SPECIFICATIONS

RF Section	Band III, 174MHz-240MHz Input: 50R,nominal Max signal: -3dBm typ Sensitivity: -96dBm typ Adjacent Channel Rejection: 35dB typ
Display	2 line by 16 character LCD LED backlight
Presets	4
Audio Output	Stereo, 2.5V P-P 48kHz sample rate 16 bit sample resolution
Optical S/PDIF	IEC60958 Compliant 48kHz sample rate 24 bit sample resolution
Power	220-240V AC 20W
Operating Temp	0 to 50 deg C

CONTACT DETAILS

We trust you are completely satisfied with this product from Acoustic Solutions Limited, however please feel free to contact us if you experience any difficulties, or if you would like to express your views regarding our products

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Through the process of continuous improvement, Acoustic Solutions Limited reserves the right to change or alter specifications without prior notice. E&OE

OTHER USEFUL ADDRESSES

BBC Digital Radio
Room 5661
Broadcasting House
Portland Place
London, W1A 1AA

Tel 08700 100 123
email: digitalradio@bbc.co.uk
www.bbc.co.uk/digitalradio

Digital Radio Development Bureau
The Radio Centre
77 Shaftesbury Avenue
London
W1D 5DU

Tel 020 7306 2630
email: info@drdb.org
www.drdb.org

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20 Southampton Street
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Tel 020 7288 4600
email: info@digitalone.co.uk
www.digitalradio.com

